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Underwriters Laboratories Inc.®

A not-for-profit organization dedicated to public safety
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August 8, 1995

Revision pages for

Standard for

Low Voltage Lighting Fixtures for Use in Recreational Vehicles

UL 234, Fourth Edition

Attached to this transmittal notice is a reprinted title page for the Fourth edition of UL 234.

Attention is directed to the note on the title page of this standard outlining the procedure to be followed to retain the approved text of ANSI/UL 234-1995.

Revised and/or additional pages may be issued from time to time.

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the following checklist:

Page	Date
1	January 6, 1994 (Reprinted August 8, 1995)
2 – 32, A1	January 6, 1994

JANUARY 6, 1994
(Title Page Reprinted: August 8, 1995)



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UL 234

Standard for

**Low Voltage Lighting Fixtures for Use
in Recreational Vehicles**

Prior to the first edition, low voltage lighting fixtures for use in recreational vehicles were evaluated using the Standard for Electric Lighting Fixtures, UL 57.

First Edition – November, 1979

Second Edition – April, 1983

Third Edition – January, 1993

Fourth Edition

January 6, 1994

Approval as an American National Standard (ANSI) covers the numbered paragraphs on pages dated January 6, 1994. These pages should not be discarded when revised or additional pages are issued if it is desired to retain the ANSI approved text.

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Approved as ANSI/UL 234-1987

Approved as ANSI/UL 234-1995, February 13, 1995

Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest published set of revision pages.

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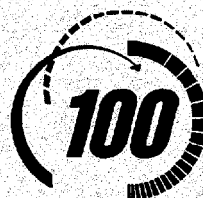
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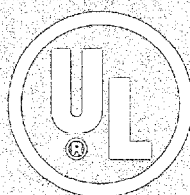
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Low Voltage Lighting Fixtures For Use In Recreational Vehicles



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Standard



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January 6, 1994

Standard for

Low Voltage Lighting Fixtures For Use In Recreational Vehicles

UL 234, Fourth Edition

Accompanying this transmittal notice is a copy of the fourth edition of UL 234.

THIS EDITION OF THE STANDARD BECOMES EFFECTIVE JANUARY 6, 1997.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this standard unless the applicant specifically requests that the product be judged under the current requirements. However, should the applicant elect this option, it should be noted that compliance with all the requirements in this standard will be required as a condition of continued Listing and Follow-Up Services after the effective date and understanding of this should be signified in writing.

The requirements in this standard are substantially in accordance with UL's bulletin on this subject dated August 9, 1993. This bulletin is now obsolete and may be discarded.

Revised and/or additional pages may be issued from time to time.

Subscribers to UL's services in the area covered by this standard will receive these revised and/or additional pages automatically. Others may receive such pages by subscribing to UL's subscription service for revisions. See UL's CATALOG OF STANDARDS FOR SAFETY for a description of the revision subscription service, the cost of the service for this standard, and ordering information.

JANUARY 6, 1994

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(01 – 01/06/94 – 01/06/94)

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

PART 1 – ALL FIXTURES

INTRODUCTION

1 Scope

Section 1 effective January 6, 1997

1.1 These requirements apply to incandescent and fluorescent low-voltage lighting fixtures, rated 24 volts or less, of the surface mounted or recessed type intended for permanent installation in recreational vehicles in accordance with Article 551 of the National Electrical Code, NFPA 70.

1.2 These requirements do not apply to running or clearance lights intended to be mounted on the exterior of a recreational vehicle.

1.3 A product that contains features, characteristics, components, materials, or systems new or different from those in use when the standard was developed, and that involves a risk of fire, electric shock, or injury to persons, shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the level of safety for the user of the product as originally anticipated by the intent of this standard.

2 General

Section 2 effective January 6, 1997

2.1 Undated references

2.1.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.2 Components

2.2.1 Except as indicated in 2.2.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

2.2.2 A component need not comply with a specific requirement that:

- a) Involves a feature or characteristic not needed in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

2.2.3 A component shall be used in accordance with its recognized rating established for the intended conditions of use.

2.2.4 Specific components are recognized as being incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions for which they have been recognized.

2.3 Units of measurement

2.3.1 If a value for measurement is followed by a value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.

2.3.2 Unless indicated otherwise all voltage and current values mentioned in this standard are root mean square (rms).

CONSTRUCTION

3 Frame and Enclosure

Section 3 effective January 6, 1997

3.1 A frame and enclosure shall be formed and assembled so that it will have the strength and rigidity necessary to resist the abuses to which it is likely to be subjected, without increasing the likelihood of fire or injury to persons due to total or partial collapse, with resulting reduction of spacings, loosening or displacement of parts, or similar effects.

3.2 Sheet metal of a frame or enclosure shall be formed from stock having a minimum thickness of 0.016 inch (0.41 mm) if of steel and 0.020 inch (0.51 mm) if of aluminum.

Exception: Metal may be thinner if the part is investigated and determined to have equivalent mechanical strength. Among the factors to be considered are size, shape, function, and resistance to distortion both during intended use and service and anticipated abuse.

3.3 An enclosure or frame formed of a nonmetallic material may be used if, upon investigation, the material exhibits properties in accordance with the requirement in 3.1. Among the factors to be considered are:

- a) Mechanical strength - the impact evaluation in Section 35;
- b) Combustibility - minimum flammability rating of 94HB;
- c) Mold stress - the mold stress evaluation in 746C shall be performed by the air oven method and;
- d) Temperature - the material shall possess a mechanical temperature index of at least the temperature measured on the part during the normal temperature test.

Exception No. 1: If the temperature measured during the normal temperature test is less than 65°C (149°F), then the enclosure or frame need not comply with this requirement.

Exception No. 2: An enclosure or frame subjected to the Thermal Conditioning Test as described in Section 34 need not comply with this requirement.

3.4 An operating part, such as a relay or similar device, shall be located such that it will not be exposed to dust or other material that might adversely affect its intended operation.